# Hong Kong Renal Registry Report 2010

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This report examines the characteristics and trends of dialysis and renal transplant patients among the resident population of Hong Kong who were managed by hospitals or dialysis centers of the Hospital Authority of Hong Kong, and who accounted for approximately 95% of all patients who received renal replacement therapy (RRT) in the territory. Patients who received RRT solely in the private sector were not included in this report. Data trends from 1996 to 2009 are presented.

In 2009, 930 new patients were accepted into RRT programs and the incident rate was 132.4 patients per million population (pmp). This is lower than the incident rate in 2008, which was 148.2 pmp. The point prevalence as of December 31, 2009 was 7,580, with a prevalence rate of 1,078.8 pmp. There were 3,401 patients on peritoneal dialysis (PD, 44.9%), 945 patients on hemodialysis (HD, 12.5%), and 3,234 patients living with a functioning renal transplant. The PD to HD ratio was 81.5:18.5 for patients on dialysis treatment at Hospital Authority centers. PD-first policy continued.

The overall mortality rate among RRT patients was 10.7 patients per 100 patient-years exposed. There was a decreasing trend in mortality among PD patients. Infection and cardiovascular complications were the most common causes of death. Renal transplant was the modality with the best survival. The 5-year cumulative patient survival rate for patients on transplant treatment was 88%, whereas the corresponding patient survival rates for PD and HD patients were 37% and 34.2%, respectively.

More than 80% of RRT patients with reports on rehabilitation were active and had normal activities. [*Hong Kong J Nephrol* 2010;12(2):81–98]

**Key words:** hemodialysis, peritoneal dialysis, renal registry, renal replacement therapy, renal transplantation

本研究旨在調查在香港地區，透析及腎臟移植患者的狀況，這些病人均是香港居民，正在接受香港醫院管理局（醫管局）轄下醫院或透析中心的服務，佔當地接受腎臟置換療法（RRT）的95%，但不包括全在私人院所接受 RRT 的病人。以下是 1996 至 2009 年的趨勢數據。

在 2009 年中，共有 930 位新病人被納入 RRT 服務計劃，發生率爲每百萬人口 132.4 人(pmp)，低於 2008 年的 148.2 pmp。截至 2009 年 12 月 31 日，點盛行個案達到 7,580，比率爲 1,078.8 pmp，共有 3,401 人接受腹膜透析（PD、44.9%），945 人接受血液透析（HD、12.5%），3,234 人則在接受腎臟移植後繼續存活。在醫管局的透析中心內，PD 與 HD 比例爲 81.5:18.5，可見 PD 繼續是優先被採用的透析治療。

在接受 RRT 的患者間，整體死亡率爲每 100 病人-年 10.7 人，PD 患者的死亡率呈現下降的趨勢。在 RRT 治療期間，最常見的死因爲感染及心血管併發症，腎臟移植則是達致最佳存活的治療方式。對於接受腎臟移植的病人，5 年累積存活率達 88%，相比之下，PD 及 HD 患者的相關比率分別爲 37% 及 34.2%。

在曾經接受復康治療的 RRT 患者間，超過 80% 仍能維持正常的日常生活。

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## Introduction

This report is based on data up to December 31, 2009 of dialysis and renal transplant patients from the Renal Registry of the Hospital Authority (HA) of Hong Kong, and accounts for 90–95% of all patients who received renal replacement therapy (RRT) in the territory. Patients who received RRT solely in the private sector were not included in this report. There are 11 renal units, two satellite centers and four renal transplant clusters in Hong Kong (Table).

The Renal Registry was implemented in the HA in April 1995. It is an online registry with data entered directly into it through Clinical Management System terminals in HA wards or clinics or through dedicated computer terminals in renal units. With the dedicated computer terminals, patient data for the individual renal unit can be retrieved and saved for service planning and patient management use. The registry is also used by the HA Head Office for RRT service planning and resource allocation. As data are entered online and renal units can update their patient data at any time, there may be minor discrepancies in the figures retrieved.

The Renal Registry is linked with other computer systems such as the Organ Procurement System and the Transplantation & Immunogenetics Laboratory System for organ allocation in deceased donor renal transplantation.

The renal registry collects data from hospital dialysis and transplant programs from patients' first RRT treatment for end-stage renal failure (ESRF; dialysis or transplantation) to their death, unless they were lost to follow-up. Only treatments provided in Hong Kong under the HA are included in this report. Data are on a calendar-year basis (January 1 to December 31).

**Table.** Renal centers and transplant clusters in Hong Kong

| Hospital cluster | Renal centers |
|---|---|
| Hong Kong West | • Queen Mary Hospital<br>• Tung Wah Hospital |
| Hong Kong East | • Pamela Youde Nethersole Eastern Hospital |
| Kowloon Central | • Queen Elizabeth Hospital<br>• Yau Ma Tei Satellite Center |
| Kowloon East | • United Christian Hospital<br>• Tseung Kwan O Hospital |
| Kowloon West | • Princess Margaret Hospital<br>• Kwong Wah Hospital<br>• Yan Chai Hospital<br>• Caritas Medical Center |
| New Territories East | • Prince of Wales Hospital<br>• Alice Ho Miu Ling Nethersole Hospital |
| New Territories West | • Tuen Mun Hospital<br>• Yan Oi Satellite Center |
| Transplant cluster hospitals | |
| Queen Mary Hospital Cluster | • Queen Mary Hospital<br>• Tung Wah Hospital<br>• Pamela Youde Nethersole Eastern Hospital<br>• Kwong Wah Hospital |
| Queen Elizabeth Hospital Cluster | • Queen Elizabeth Hospital<br>• Yau Ma Tei Satellite Center<br>• United Christian Hospital |
| Princess Margaret Hospital Cluster | • Princess Margaret Hospital<br>• Yan Chai Hospital<br>• Caritas Medical Center<br>• Tuen Mun Hospital<br>• Yan Oi Satellite Center |
| Prince of Wales Hospital Cluster | • Prince of Wales Hospital<br>• Alice Ho Miu Ling Nethersole Hospital |

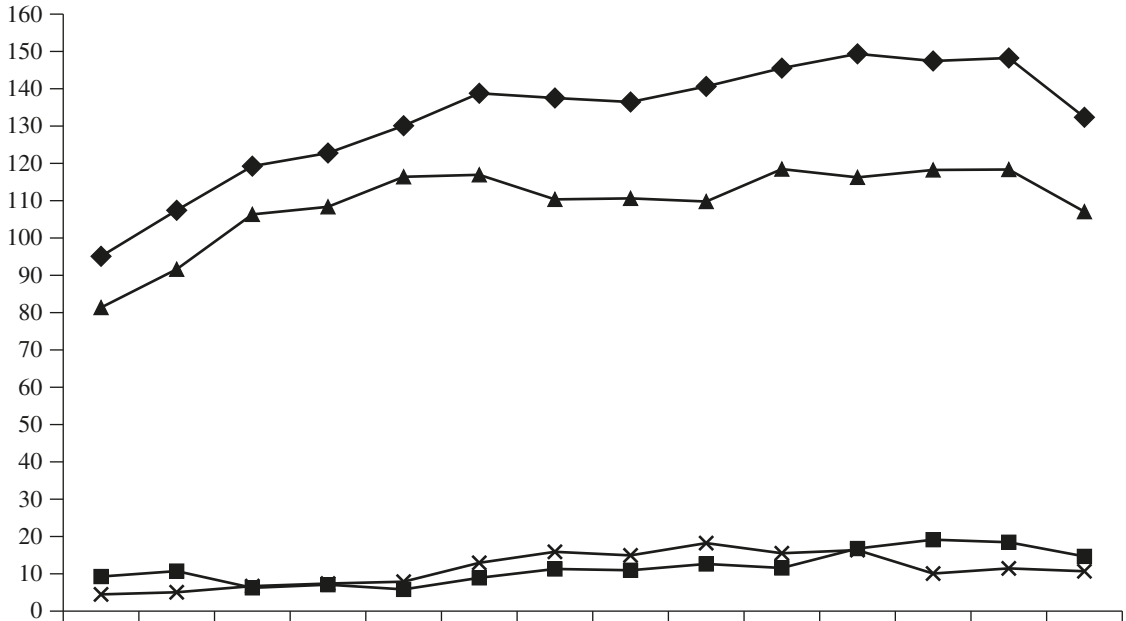
## The Incident Patients

In the year ending December 31, 2009, there were 930 newly diagnosed patients with ESRF accepted into dialysis programs or who received preemptive renal transplants. The incidence rate was 132.4 per million population (pmp). There was a decrease in the number of patients accepted into RRT programs in the year 2009 compared with preceding years (the trend from 1996 to 2009 is shown in Figure 1). This coincided with the promotion of advance care planning and supportive care for patients who did not want RRT in the management of ESRF. The decline in acceptance of peritoneal dialysis (PD) was more marked.

The mean and median age for incident RRT patients for the year 2009 were 57.7 and 58.3 years, respectively. The mean and median age for incident PD patients were 59.9 and 60.0 years, respectively. In the year 2009, there was a decrease in the number of patients aged 65 or older who accepted RRT (Figure 2).

For the period 1996–2009, the mean and median age for incident patients on PD and hemodialysis (HD), and those who received renal transplant increased gradually (Figures 3 and 4). This was in line with the increase in the age of the population in Hong Kong. There were more male than female patients accepting RRT (Figure 5).

Diabetes remained the most common primary etiology leading to ESRF and acceptance of RRT, accounting for 46.2% of cases; 20.2% of the primary etiology was due to glomerulonephritis. Hypertension and other vascular causes were responsible for 9.6% (Figure 6). There was an increasing percentage of patients with a primary diagnosis of diabetes mellitus being responsible for their ESRF. The percentage of diabetes mellitus among incident patients increased by 15% in 10 years, from 31.4% in 1999 to 46.2% in 2009.




| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All RRT | 95.1 | 107.4 | 119.2 | 122.8 | 130.1 | 138.8 | 137.5 | 136.5 | 140.6 | 145.5 | 149.4 | 147.4 | 148.2 | 132.4 |
| PD | 81.3 | 91.6 | 106.3 | 108.3 | 116.4 | 116.9 | 110.3 | 110.6 | 109.7 | 118.5 | 116.2 | 118.2 | 118.3 | 107.0 |
| HD | 9.3 | 10.7 | 6.2 | 7.1 | 5.8 | 8.9 | 11.3 | 10.9 | 12.7 | 11.6 | 16.8 | 19.1 | 18.5 | 14.7 |
| RTx | 4.5 | 5.1 | 6.7 | 7.4 | 7.9 | 12.9 | 15.9 | 14.9 | 18.2 | 15.5 | 16.4 | 10.1 | 11.4 | 10.7 |

**Figure 1.** Incident rates (per million population) by calendar year of patients accepted into RRT programs, 1996–2009. RRT = renal replacement therapy; PD = peritoneal dialysis; HD = hemodialysis; RTx = renal transplant.

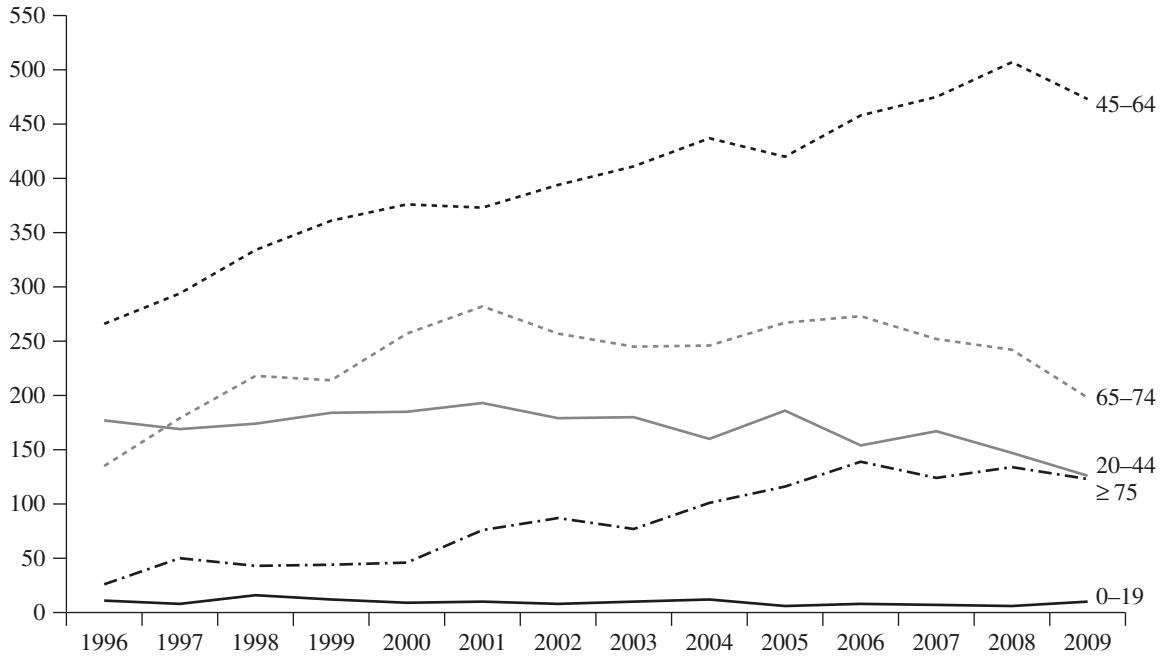



**Figure 2.** Age-stratified trends in incident counts by calendar year, 1996–2009.

## The Point Prevalent Patients

As of December 31, 2009, 7,580 people were registered in the Renal Registry for RRT treatment, with less than half (44.9%, *n* = 3,401) receiving PD, followed by 42.7% (3,234) living with a functioning kidney transplant, and 945 (12.5%) being treated with HD (Figure 7). The prevalent rate of RRT as of December 31, 2009 was


**Figure 3.** Trends in mean age for incident RRT patients, 1996–2009. PD = peritoneal dialysis; HD = hemodialysis; RRT = renal replacement therapy; RTx = renal transplant.

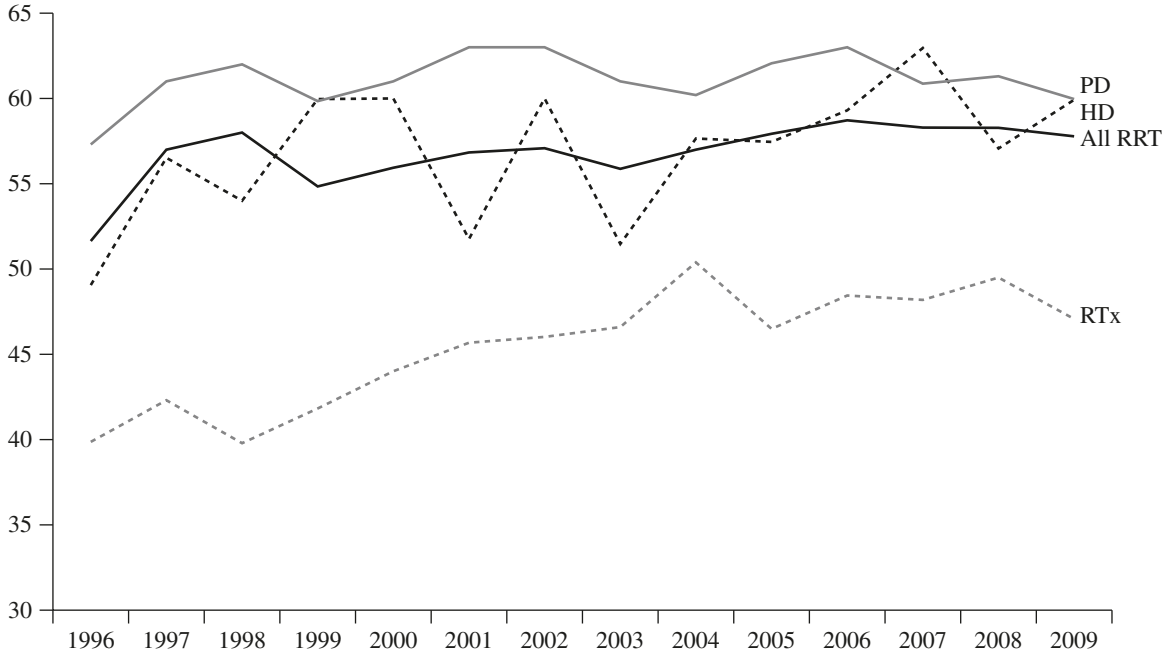



**Figure 4.** Trends in median age for incident RRT patients, 1996–2009. PD = peritoneal dialysis; HD = hemodialysis; RRT = renal replacement therapy; RTx = renal transplant.

1,078.8 pmp. There was an increasing trend in prevalence rates from 1996 to 2009 (Figure 8).

The profile of prevalent ESRF patients in Hong Kong has gradually changed over time. While at the end of 2009, the largest category of RRT patients were those receiving PD (44.9%), the proportion of patients on PD has decreased compared to previous years (Figure 8), and the proportion of patients with functioning renal transplants has increased. In 1996, 28.9% of RRT patients had functioning renal transplants. This had increased to 42.7% in 2009. There was also a gradual increase in the provision of HD services in the territory. Now, in addition

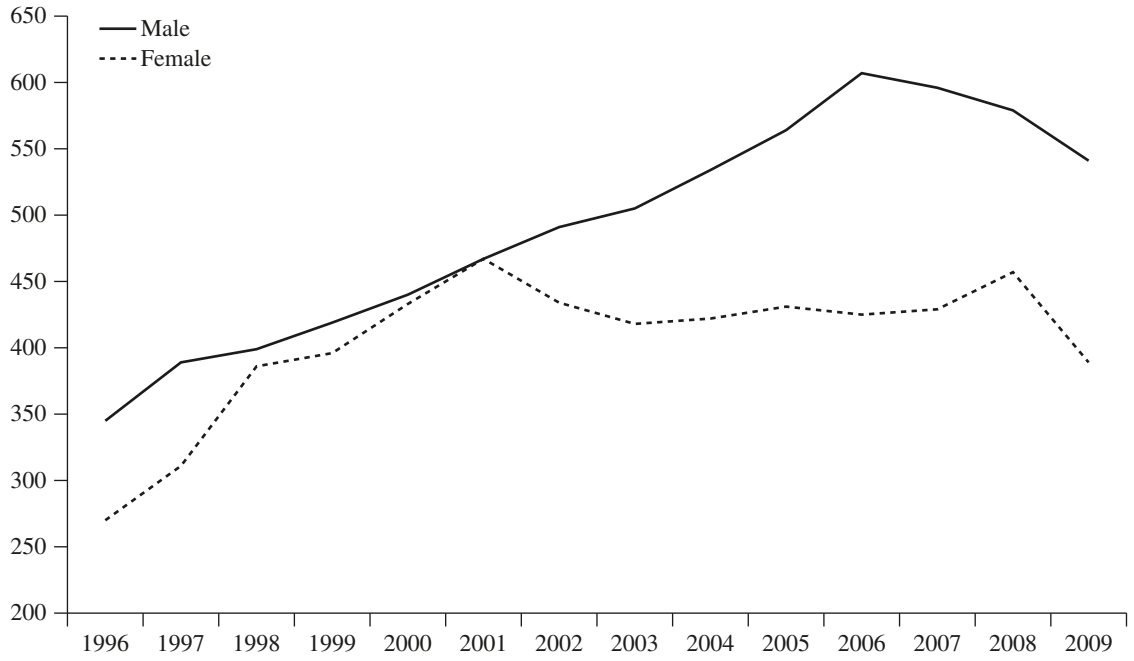



**Figure 5.** Sex distribution of incident patients, 1996–2009.

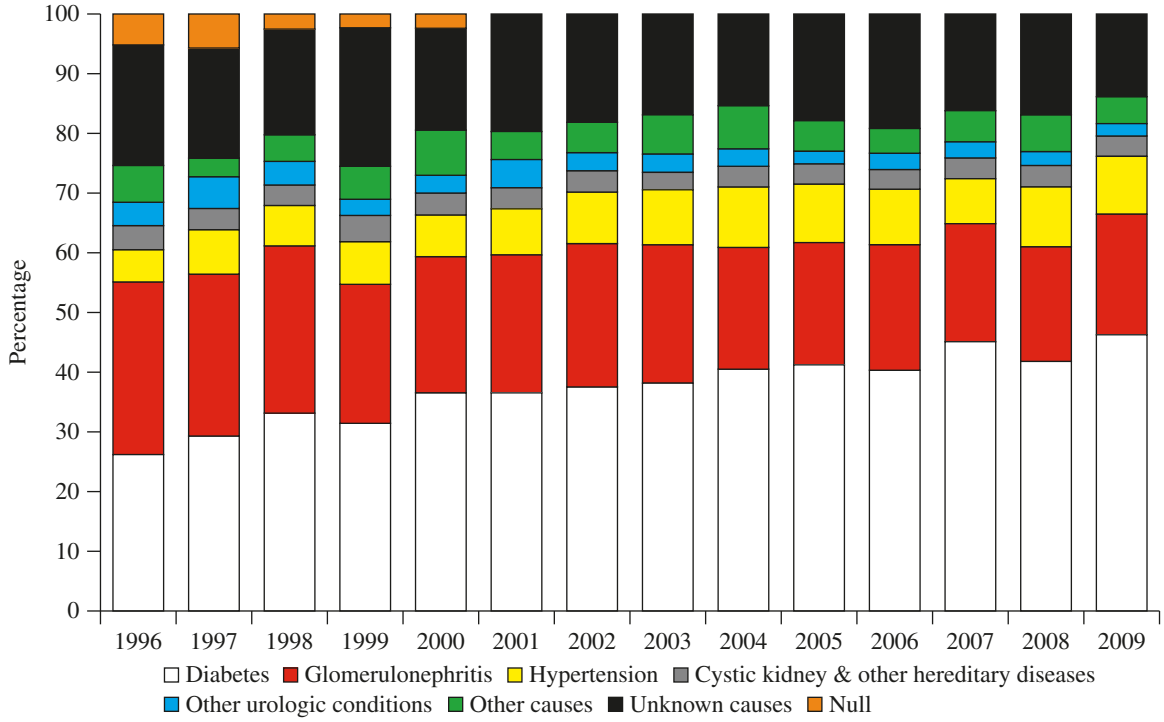



**Figure 6.** Diagnosis distribution (% incident counts) of patients, 1996–2009.

to HD services provided by HA centers, a proportion of patients receiving HD at charitable and private centers are followed-up at HA renal units.

The proportion of HD to PD among dialysis patients increased slightly from 20.8:79.2 in 1999 to 21.7:78.3 in 2009 (Figure 9). When examining dialysis treatment in HA centers only, the ratio was 17.5:82.5 in 1996 and 18.5:81.5 in 2009 (Figure 10). Moreover, in terms of patient-years on treatment, a change in proportion was also evident; the HD:PD ratio was 18:82 in 1999 and 23:77 in 2009 (Figure 11).

### *PD*

The PD-first policy has continued in Hong Kong. As of December 31, 2009, 3,401 patients were on various types of PD treatment with a prevalence of 484 pmp,

comprising 78.3% of the dialysis population. The majority of PD patients received continuous ambulatory PD (CAPD; $n=3,131$, 92%; Figure 12). Moreover, the proportion of patients on automated PD (continuous cyclic PD, $n=112$, 3.3%; and nocturnal intermittent PD, $n=158$, 4.7%) has increased steadily in the past 5 years (Figure 13). On the other hand, the number of CAPD patients showed negative growth in the year 2009. From the year 2000 onwards, there was gradual switching of connecting PD systems to disconnect systems. By 2009, all patients on PD were on disconnect systems.

### *HD*

The majority of HD patients in Hong Kong switch from PD. There was a steady increase in the provision of HD services, and home HD in the form of nocturnal home HD was reintroduced (Figure 14). As of December 31, 2009, 642 patients (67.9%) were on regular HD in the HA hospital setting, 77 (8.2%) were on HD at satellite centers, 26 patients (2.8%) were on home HD, and 172 (21.1%) were dialyzed at charitable or private HD centers. The prevalence of HD was 134.4 pmp, comprising 21.7% of all dialysis patients.

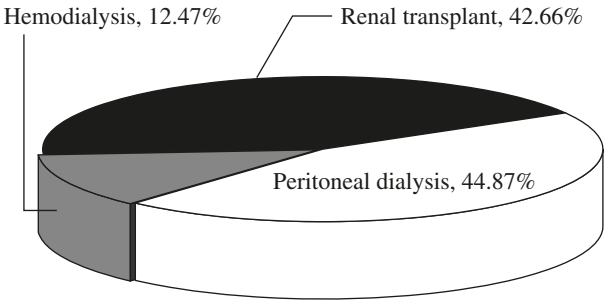



**Figure 7.** Point prevalent distribution of renal replacement therapy patients registered in the Hong Kong Renal Registry as of December 31, 2009.

### *Kidney transplantation*

The proportion of patients with functioning grafts continued to increase (Figure 15), comprising 42.7% of RRT patients in 2009, with a prevalence of 460.3 pmp. Ten years ago, in 1999, the corresponding figures were 30.2% and 205 pmp, respectively. Among the 3,234 patients with functioning grafts on December 31, 2009, 1,023 (31.6%) had undergone transplantation in Hong Kong while the other transplantations had been performed overseas. Of the transplantations done in Hong Kong, 670 (65.5%) were deceased donor renal transplantations (DDRT) and 353 (34.5%) were living donor renal transplantations (LDRT).

In the year ending December 31, 2009, 241 patients commenced transplant treatment; among them, 87 were DDRT procured from among HA hospitals. There was an increasing trend in deceased donor kidney procurement from 1996 to 2009, resulting in a higher prevalence of DDRT patients in the functioning transplant pool (Figure 16). A review on living donor procurement in Hong Kong may be necessary as the number of new LDRT appears to be decreasing.

### *Erythropoietin*

The number of patients on erythropoietin treatment is grossly underreported in the renal registry because manual

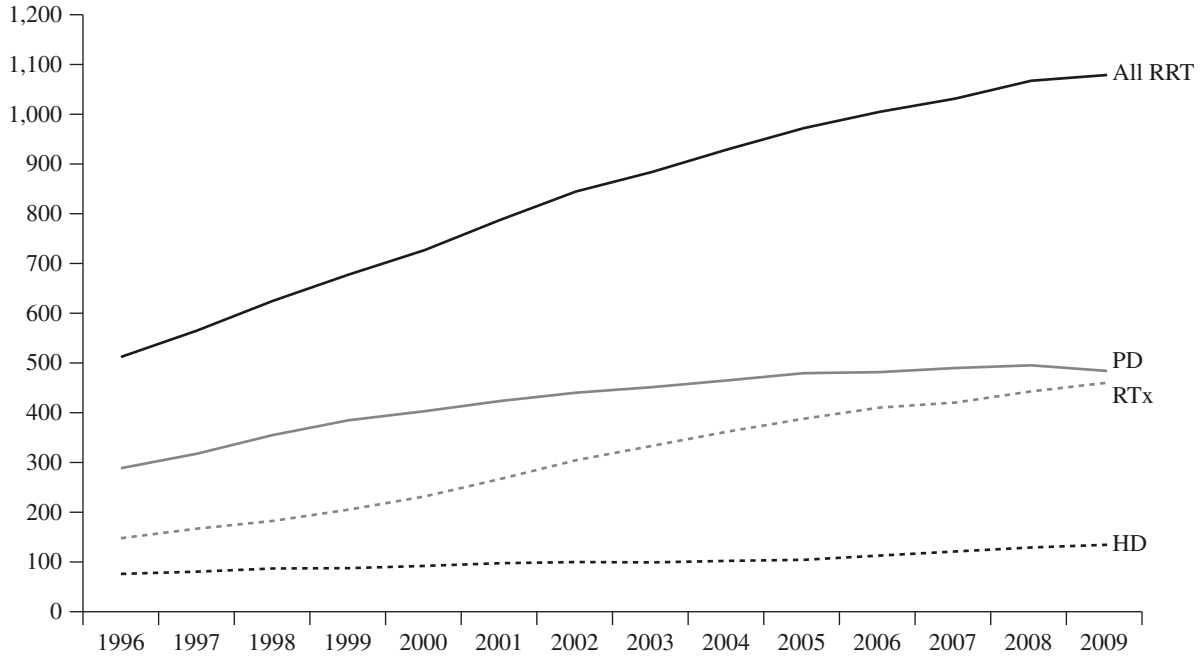



**Figure 8.** Trends in point prevalent distribution of renal replacement therapy (RRT), 1996–2009. PD=peritoneal dialysis; RTx=renal transplant; HD=hemodialysis.

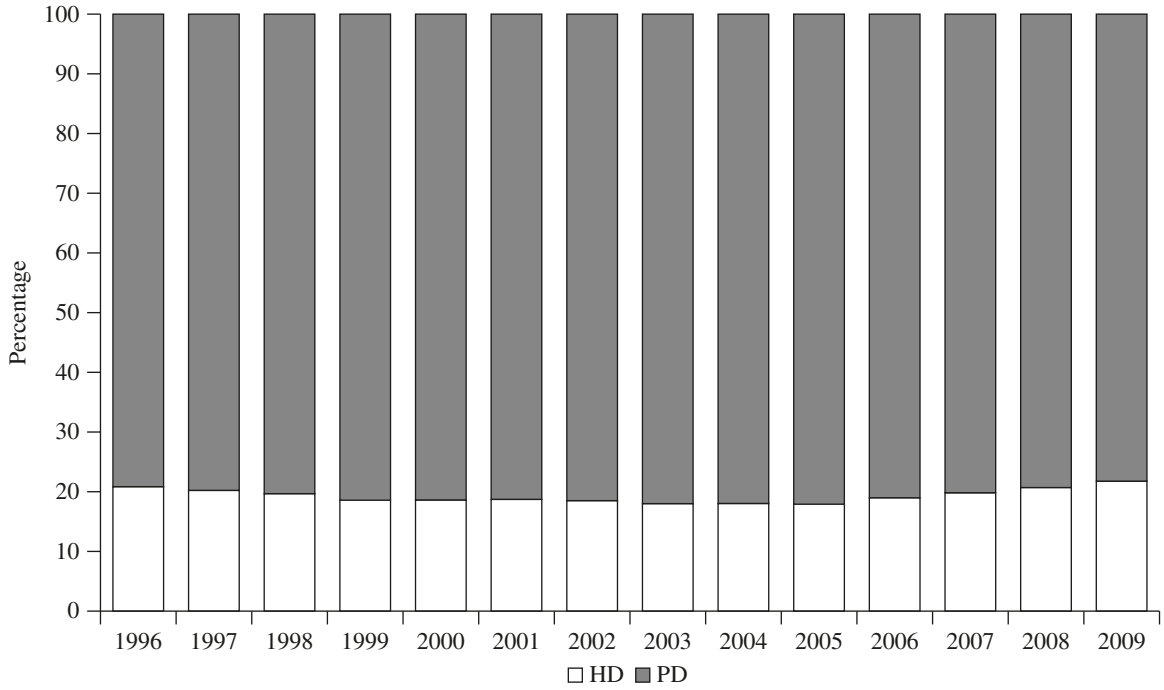



**Figure 9.** PD:HD ratio for all registered patients in Hospital Authority, including HD in charitable and private centers, 1996–2009. HD = hemodialysis; PD = peritoneal dialysis.

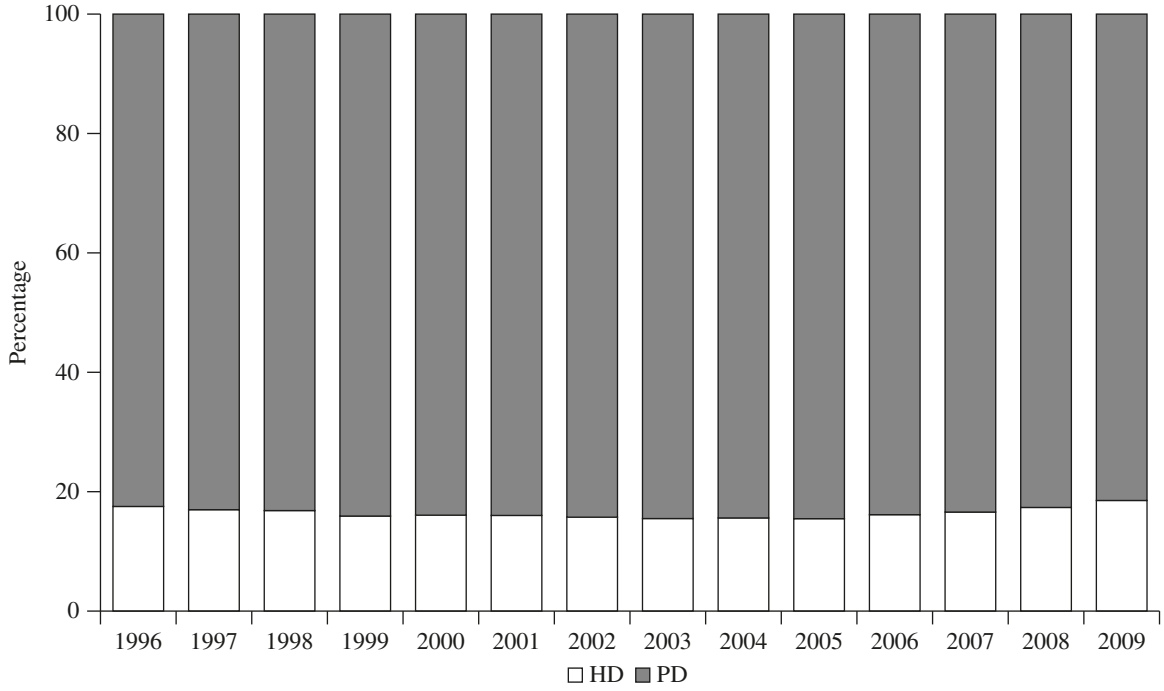
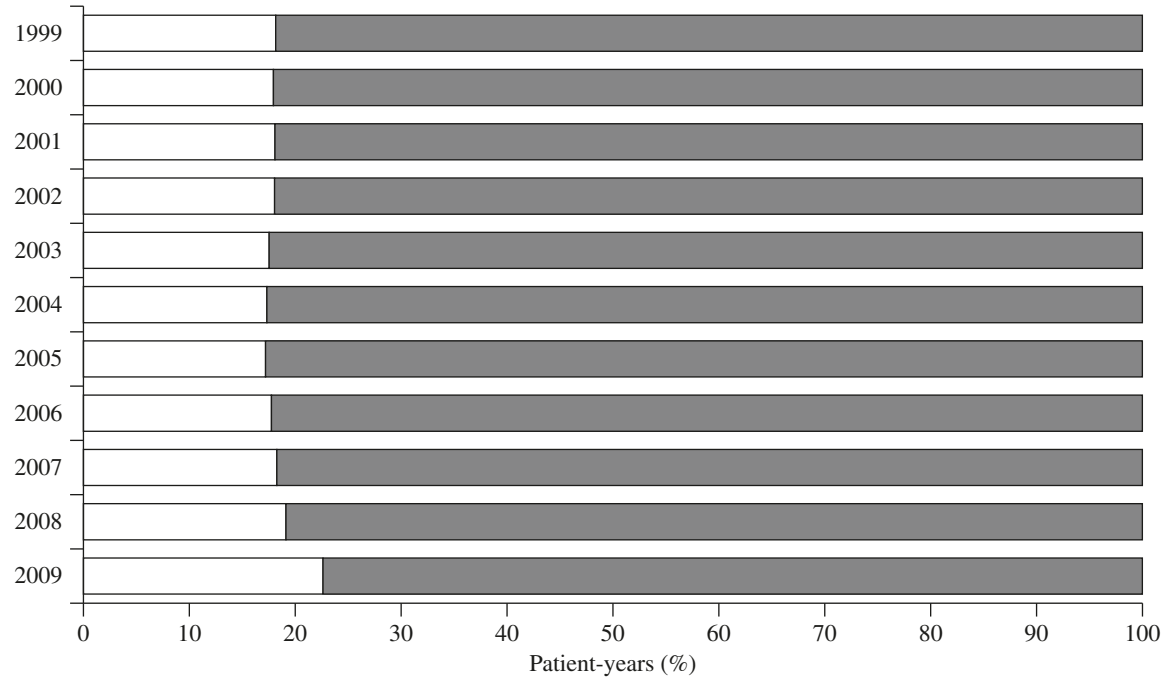



**Figure 10.** PD:HD ratio for dialysis patients in Hospital Authority centers, 1996–2009. HD = hemodialysis; PD = peritoneal dialysis.

input is required. The prescription of erythropoiesis-stimulating agents has been increasing steadily. In 1996, 29.3% of dialysis patients were reported to be on erythropoietin. In 2009, the reported proportion reached beyond 45% (Figure 17).

### *Diagnosis and comorbidities*

The pattern of disease and comorbidities changed with the changing environment and aging community. Diabetes is currently the leading primary diagnosis among ESRF patients. In prevalent patients, the proportion




| | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ PD | 0.774 | 0.809 | 0.817 | 0.822 | 0.828 | 0.827 | 0.825 | 0.819 | 0.819 | 0.821 | 0.818 |
| □ HD | 0.226 | 0.191 | 0.183 | 0.178 | 0.172 | 0.173 | 0.175 | 0.181 | 0.181 | 0.179 | 0.182 |

**Figure 11.** PD:HD ratio (% patient-years) for patients in Hospital Authority centers, 1999–2009. PD = peritoneal dialysis; HD = hemodialysis.

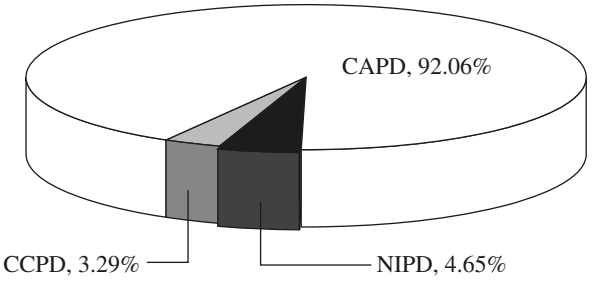



**Figure 12.** Distribution of different types of peritoneal dialysis (PD) as of December 31, 2009. CAPD = continuous ambulatory PD; CCPD = continuous cyclic PD; NIPD = nocturnal intermittent PD.

of diabetes and hypertension increased from 12.9% and 3.6%, respectively, in 1996 to 24.6% and 7.6%, respectively, in 2009 (Figure 18). The proportions of other diagnoses remained similar throughout the years. The prevalence of hepatitis C virus carriers decreased from 7% in 1996 to 2.5% in 2009, while the prevalence of hepatitis B virus carriers was similar to that in our local population, which was 9.9% in 2009. When diabetes was regarded as a comorbidity, prevalent patients increased from 20.6% in 1996 to 31.6% in 2009 (Figure 19).

## Outcomes

Mortality rates were calculated by counting the number of deaths by patient-years exposed. The mortality rates for patients on PD, HD and renal transplant were 19.11, 15.0 and 1.70 deaths per 100 patient-years in 2009. The overall mortality rate was 10.38 deaths per 100 patient-years.

There was a decreasing trend in mortality in PD patients, whereas the mortality of transplant recipients increased in the past 3 years (Figure 20). Better dialysis care and patient decisions on either dialysis or supportive management might be the reason behind the improvement in PD. The higher mortality among transplant recipients might be a reflection of the fact that more and more elderly patients have been receiving DDRT in the past few years.

Infection and cardiovascular deaths were the most common causes of deaths. There was an increase in "unknown cause of death" being reported to the registry in the past 3 years (Figure 21).

As for patient survival, there was significant variation among different age groups of PD patients. The overall median survival was 3.9 years. The cumulative 1- and 5-year patient survival for those aged 20–44 were

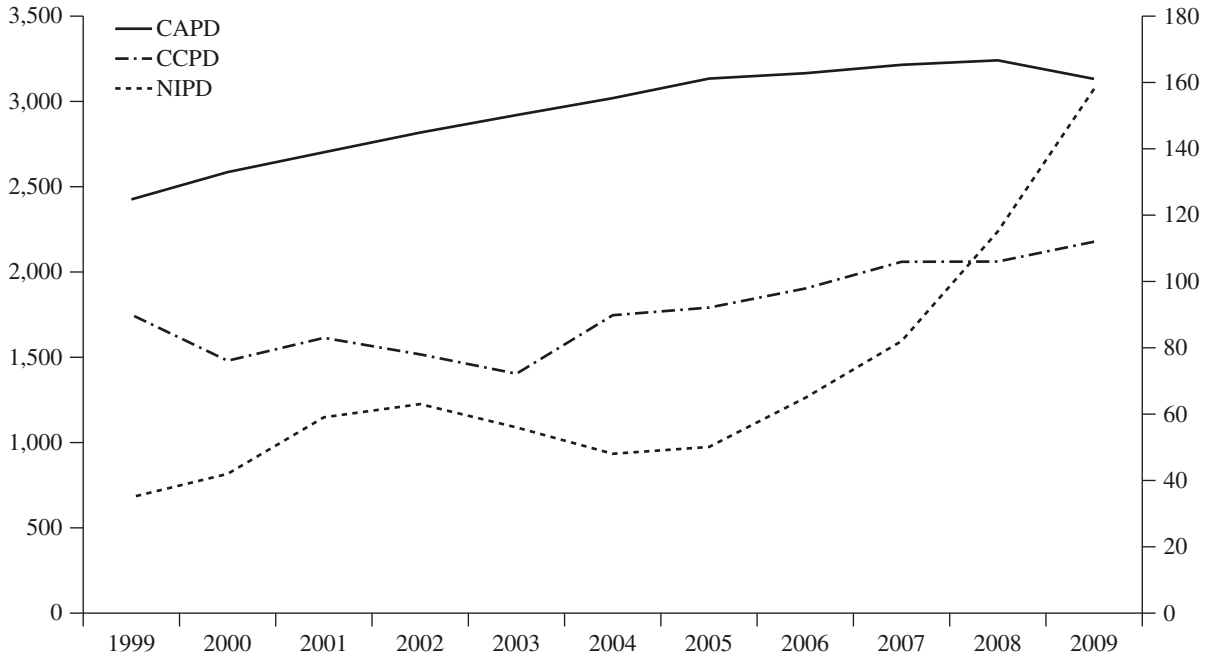



**Figure 13.** Trends (prevalent counts) in the different types of peritoneal dialysis (PD), 1999–2009. CAPD=continuous ambulatory PD; NIPD=nocturnal intermittent PD; CCPD=continuous cyclic PD.

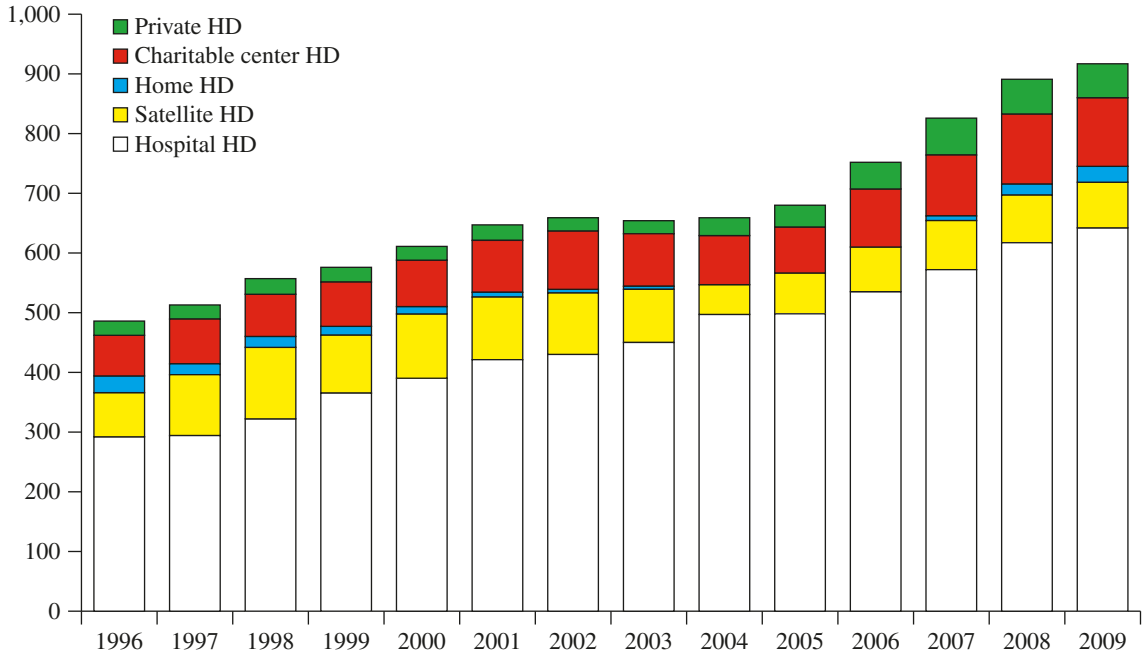
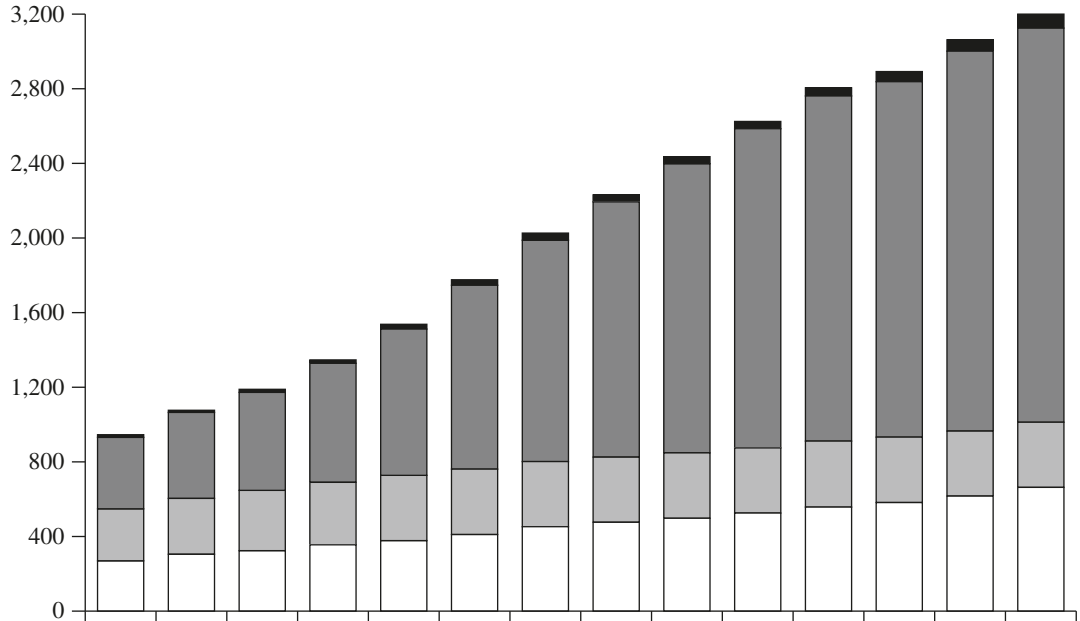



**Figure 14.** Trends (prevalent counts) in the different types of hemodialysis (HD), 1996–2009.

94% and 64%, respectively, whereas for patients aged 65–74, the corresponding figures for cumulative survival were 87% and 25%, respectively (Figure 22).

Disconnect systems were introduced gradually in the late 1990s. We compared the registry data of patients who commenced PD between 1995 and 1999 when the majority of patients were on connect systems with data from 2000 to 2005 when most patients were on disconnect systems. The 1-year cumulative patient survival rates were 87% and 90% for the connect and disconnect systems, respectively, whereas the 3-year cumulative survival rates were 59% and 64%, and the 5-year cumulative survival rates were 35% and 38%, respectively. Patients who commenced PD during the latter time period survived better (Figure 23).

Among the 3,401 prevalent PD patients as of December 31, 2009, 112 of them had been on PD for 10 years or more. Among these 112 patients, 15 had




| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ LDRT—Overseas | 15 | 12 | 17 | 19 | 26 | 30 | 39 | 38 | 38 | 40 | 44 | 55 | 62 | 76 |
| ■ DDRT—Overseas | 387 | 466 | 531 | 644 | 793 | 996 | 1,199 | 1,383 | 1,567 | 1,729 | 1,870 | 1,926 | 2,058 | 2,135 |
| ■ LDRT—Hong Kong | 282 | 302 | 327 | 339 | 353 | 354 | 353 | 353 | 354 | 353 | 358 | 354 | 352 | 353 |
| □ DDRT—Hong Kong | 272 | 308 | 327 | 359 | 382 | 415 | 457 | 481 | 503 | 531 | 563 | 588 | 623 | 670 |

**Figure 15.** Trends (prevalent counts) in renal transplantation, 1996–2009. LDRT = living donor renal transplantation; DDRT = deceased donor renal transplantation.

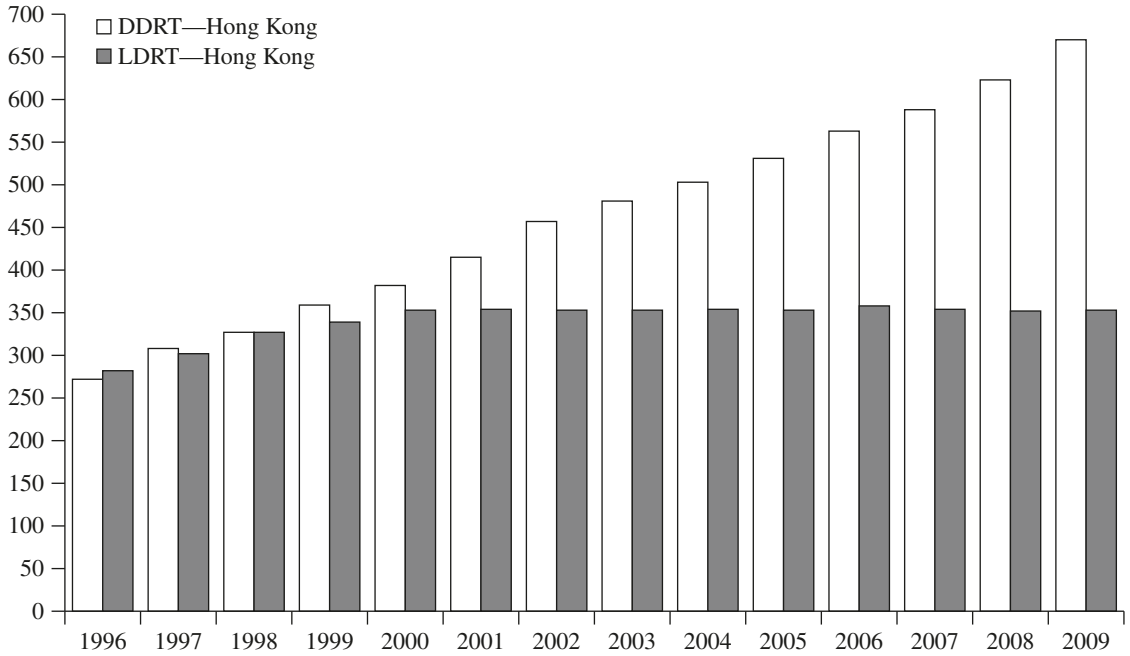



**Figure 16.** Trends in DDRT and LDRT performed in Hong Kong, 1996–2009. DDRT = deceased donor renal transplantation; LDRT = living donor renal transplantation.

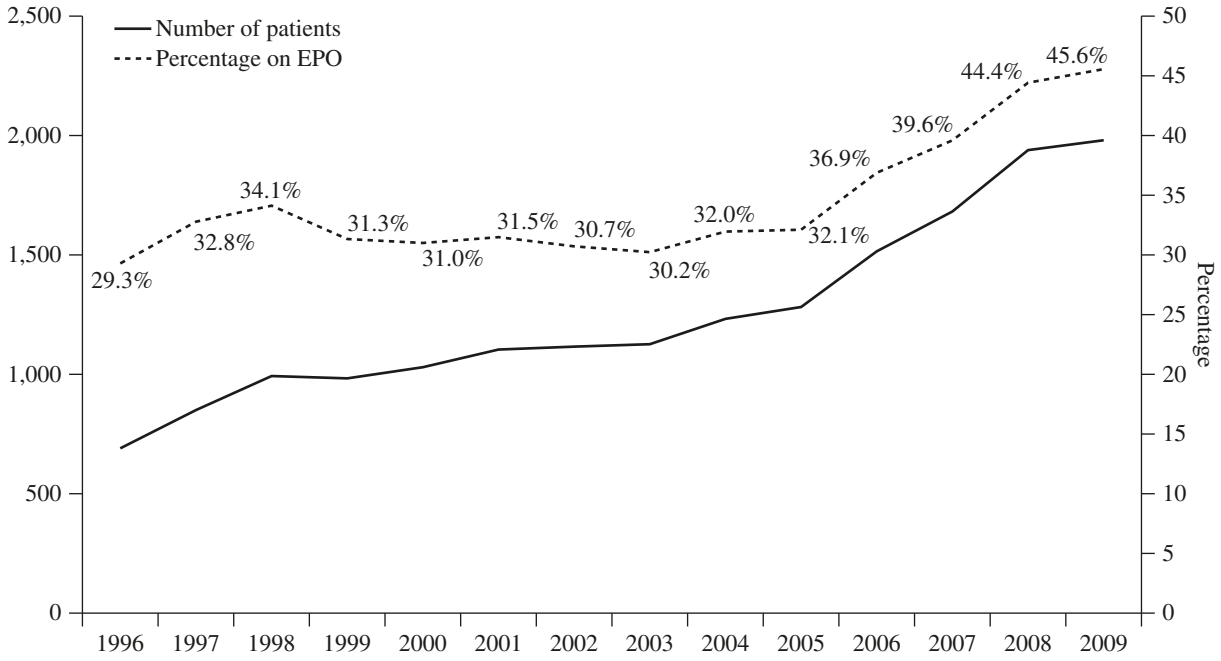



**Figure 17.** Trends in the number and percentage of dialysis patients on erythropoietin (EPO), 1996–2009.

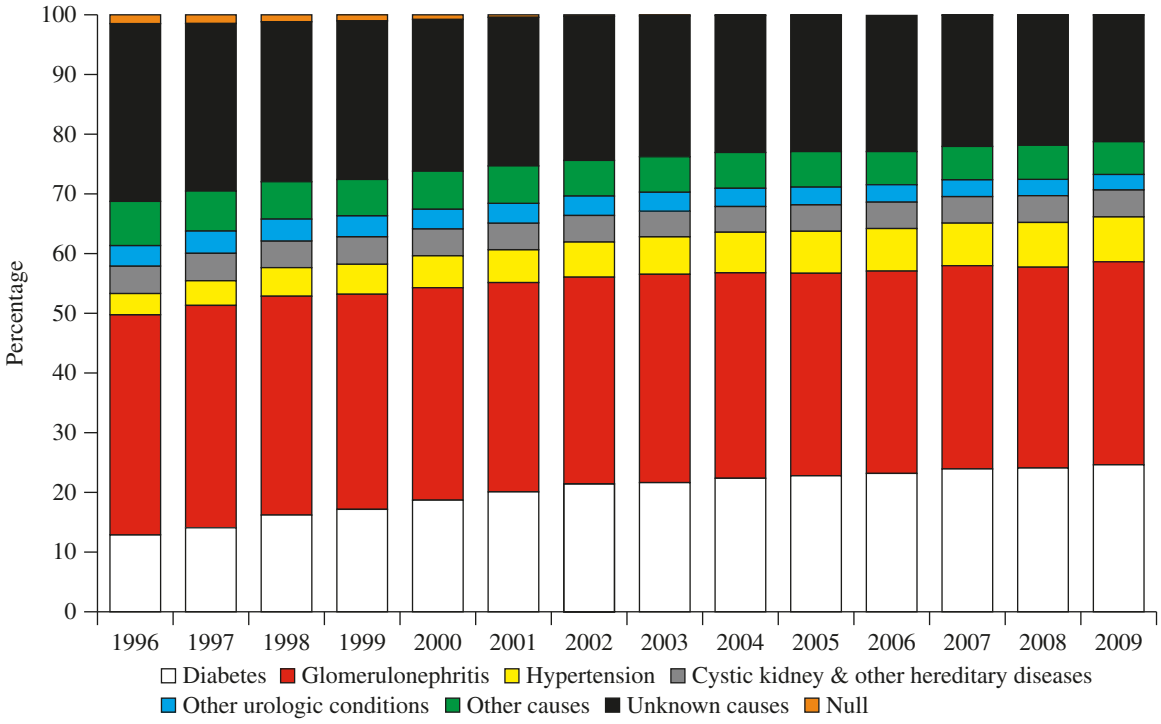



**Figure 18.** Distribution (% prevalent patient counts) of primary diagnoses, 1996–2009.

been on PD for 15–20 years and two for more than 20 years.

The overall peritonitis rate for CAPD has improved from 22 patient-months per episode in 1996 to 31.8 patient-months per episode in 2009. There were variations in peritonitis rates between different dialysis systems and the trends from 1999 to 2009 are presented in Figure 24. In 2009, patients on nocturnal intermittent PD performed best, with a peritonitis rate of 69.8 patient-months per episode (Figure 24).

The pattern of microorganisms has remained relatively constant throughout 1999 to 2009 (Figure 25). In 2009, 47% were Gram-positive organisms, 36% were Gram-negative organisms, and 12.6% were

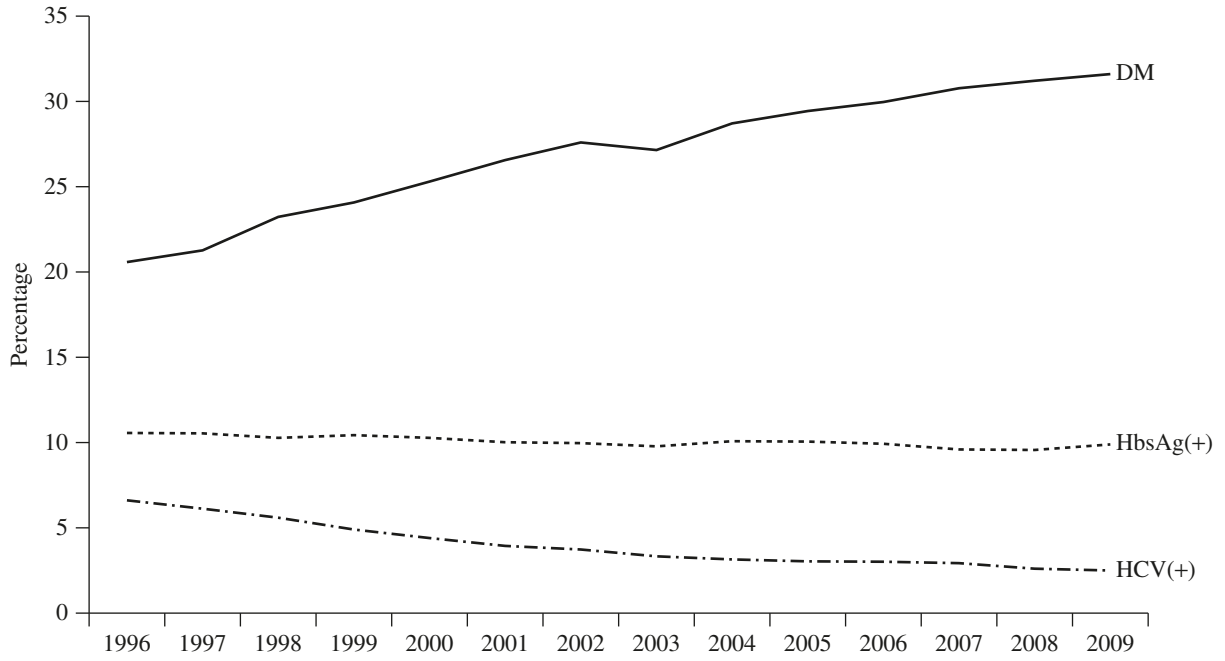
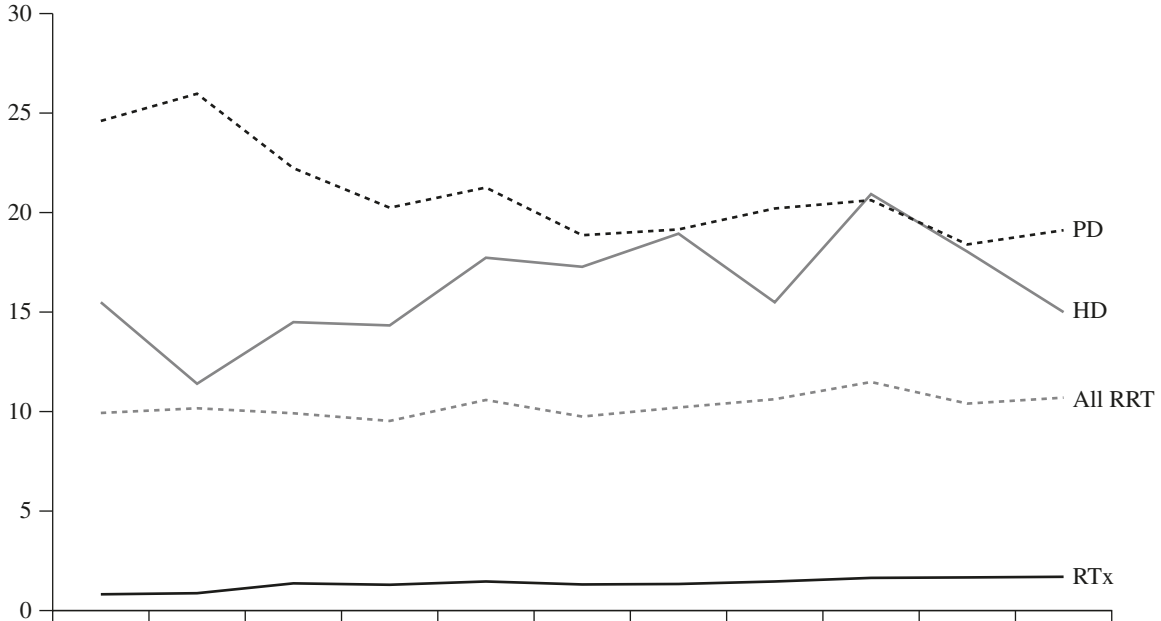



**Figure 19.** Comorbidities (hepatitis B virus, hepatitis C virus, diabetes mellitus) among prevalent patients, 1996–2009.




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RTx | 0.81 | 0.87 | 1.37 | 1.30 | 1.46 | 1.31 | 1.33 | 1.46 | 1.64 | 1.67 | 1.70 |
| HD | 15.49 | 11.40 | 14.50 | 14.33 | 17.73 | 17.27 | 18.94 | 15.49 | 20.93 | 18.03 | 15.00 |
| PD | 24.61 | 25.97 | 22.23 | 20.24 | 21.26 | 18.86 | 19.15 | 20.20 | 20.62 | 18.39 | 19.11 |
| All RRT | 9.93 | 10.16 | 9.92 | 9.53 | 10.58 | 9.75 | 10.20 | 10.62 | 11.48 | 10.40 | 10.70 |

**Figure 20.** Annual mortality rates per 100 patient-years, 1999–2009. RTx = renal transplant; HD = hemodialysis; PD = peritoneal dialysis; RRT = renal replacement therapy.

culture-negative. On closer examination of the data, there were decreasing trends from 1999 to 2009 in the reported cases of methicillin-resistant *Staphylococcus aureus* and *Pseudomonas* species (Figure 26).

For HD patients who commenced treatment between 1995 and 2005, the overall 1-year cumulative patient survival rate was 72.4%, 3-year patient survival was 51.4%, and 5-year patient survival was 34.2%; median survival

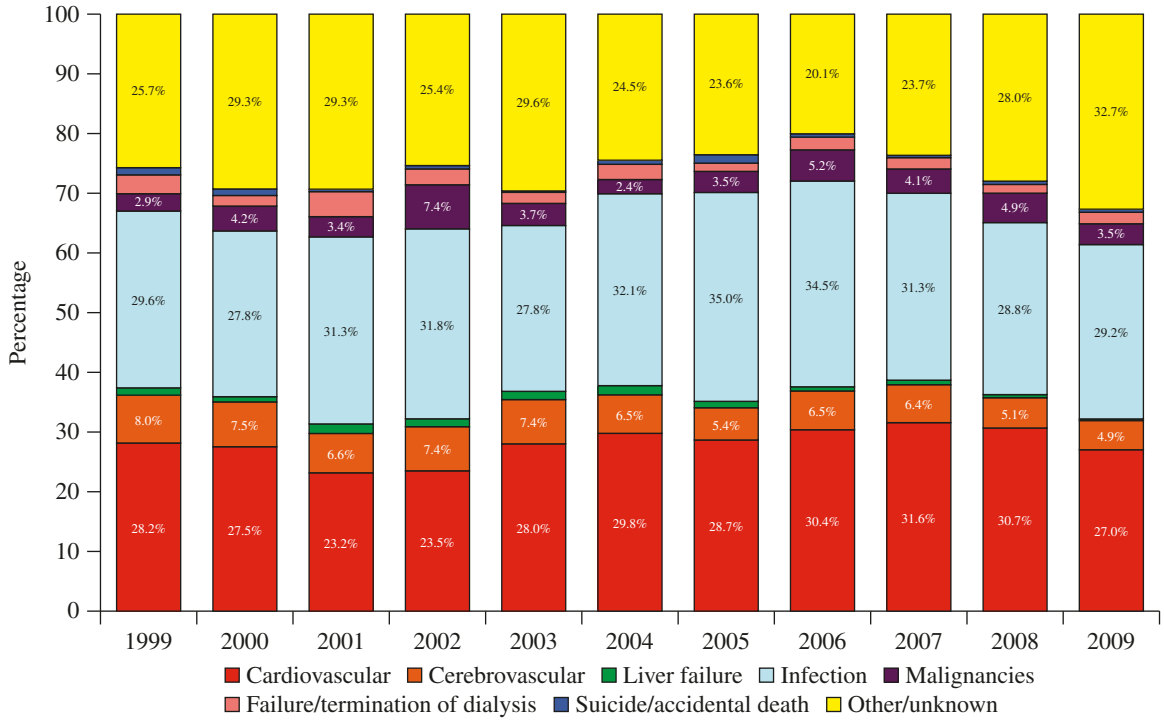



**Figure 21.** Trends in cause of death for all renal replacement therapy patients, 1999–2009.

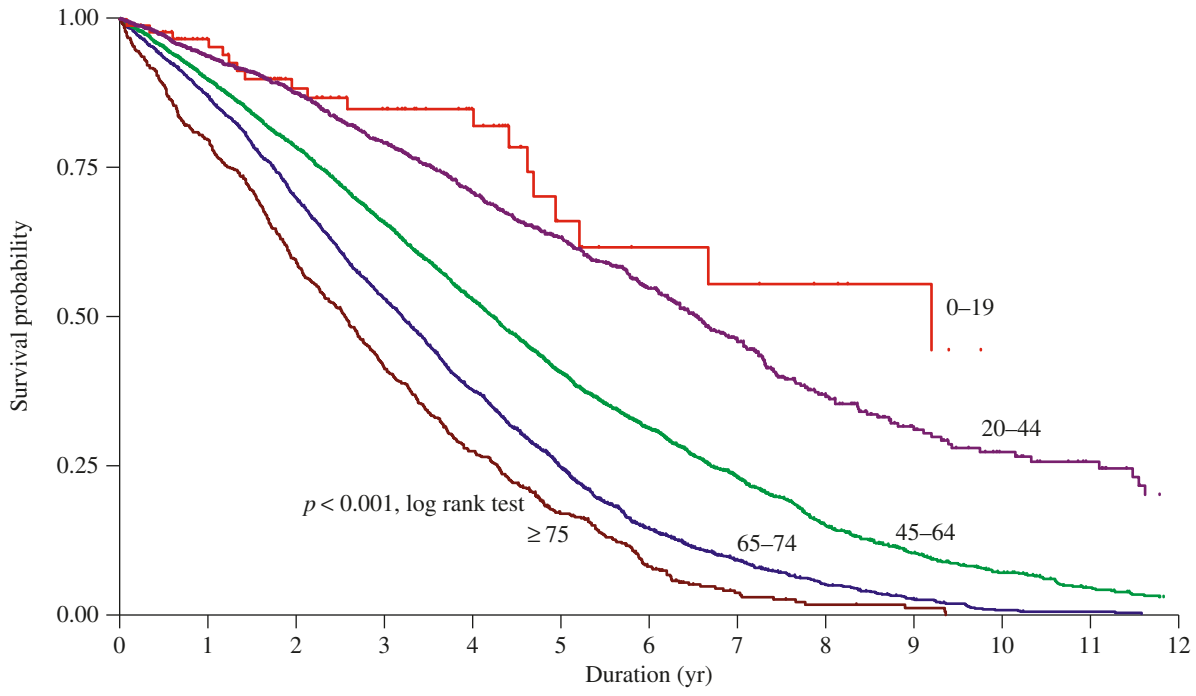



**Figure 22.** Age-stratified peritoneal dialysis patient survival, 1995–2005.

time was 3.2 years. When patients who commenced HD between 1995 and 1999 were compared with those who started HD between 2000 and 2005, the former group of patients survived longer, although the median survival time of both groups was 3.2 years (Figure 27).

For patients who received DDRT in Hong Kong between 1995 and 2005, 1-year patient survival was 94.0%, 3-year survival was 90.9%, 5-year survival was 88%, and 10-year survival was 81.7%. The corresponding graft survivals (death not censored) were 88.2%, 83.4%,

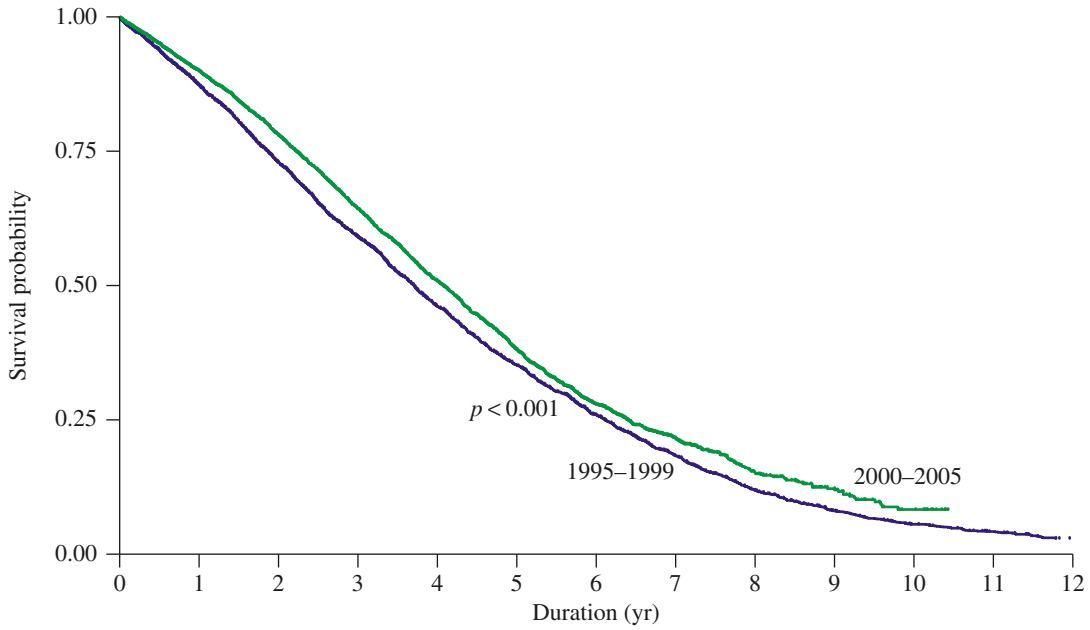
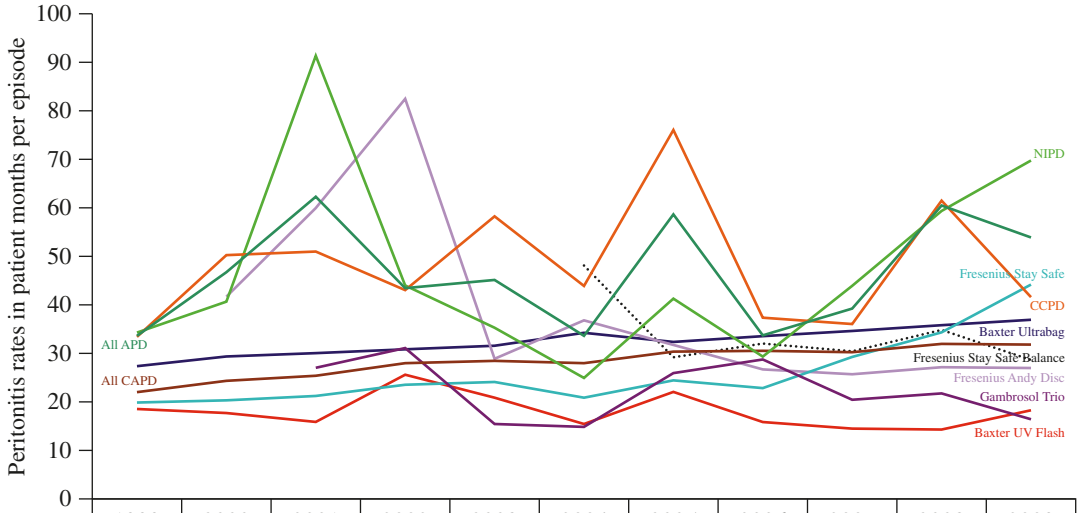



**Figure 23.** Peritoneal dialysis (PD) patient survival, 1995–2005, stratified by time of PD commencement (1995–1999 *vs.* 2000–2005).




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baxter UV Flash | 18.54 | 17.70 | 15.87 | 25.61 | 20.86 | 15.43 | 22.06 | 15.83 | 14.49 | 14.29 | 18.28 |
| Baxter Ultrabag | 27.36 | 29.35 | 30.06 | 30.83 | 31.58 | 34.25 | 32.37 | 33.55 | 34.62 | 35.80 | 36.93 |
| Fresenius Stay Safe | 19.88 | 20.33 | 21.21 | 23.52 | 24.10 | 20.86 | 24.43 | 22.85 | 29.26 | 34.34 | 44.18 |
| Fresenius Andy Disc | | 41.69 | 59.96 | 82.46 | 28.89 | 36.81 | 31.74 | 26.71 | 25.70 | 27.14 | 26.97 |
| Fresenius Stay Safe Balance | | | | | | 48.11 | 29.20 | 32.02 | 30.44 | 34.84 | 28.65 |
| Gambrosol Trio | | | 27.03 | 31.11 | 15.43 | 14.86 | 25.92 | 28.74 | 20.43 | 21.74 | 16.41 |
| All CAPD | 22.00 | 24.34 | 25.39 | 27.99 | 28.45 | 27.98 | 30.36 | 30.52 | 30.24 | 31.96 | 31.80 |
| NIPD | 34.27 | 40.67 | 91.35 | 44.00 | 35.29 | 24.92 | 41.27 | 29.33 | 43.92 | 59.37 | 69.76 |
| CCPD | 33.41 | 50.25 | 50.99 | 43.04 | 58.25 | 43.91 | 76.04 | 37.35 | 36.05 | 61.48 | 41.58 |
| All APD | 33.63 | 46.74 | 62.29 | 43.45 | 45.13 | 33.63 | 58.65 | 33.72 | 39.23 | 60.48 | 53.88 |

**Figure 24.** Trends in peritoneal dialysis (PD) peritonitis rates (patient-months per episode), 1999–2009. CAPD = continuous ambulatory PD; NIPD = nocturnal intermittent PD; CCPD = continuous cyclic PD; APD = automated PD.

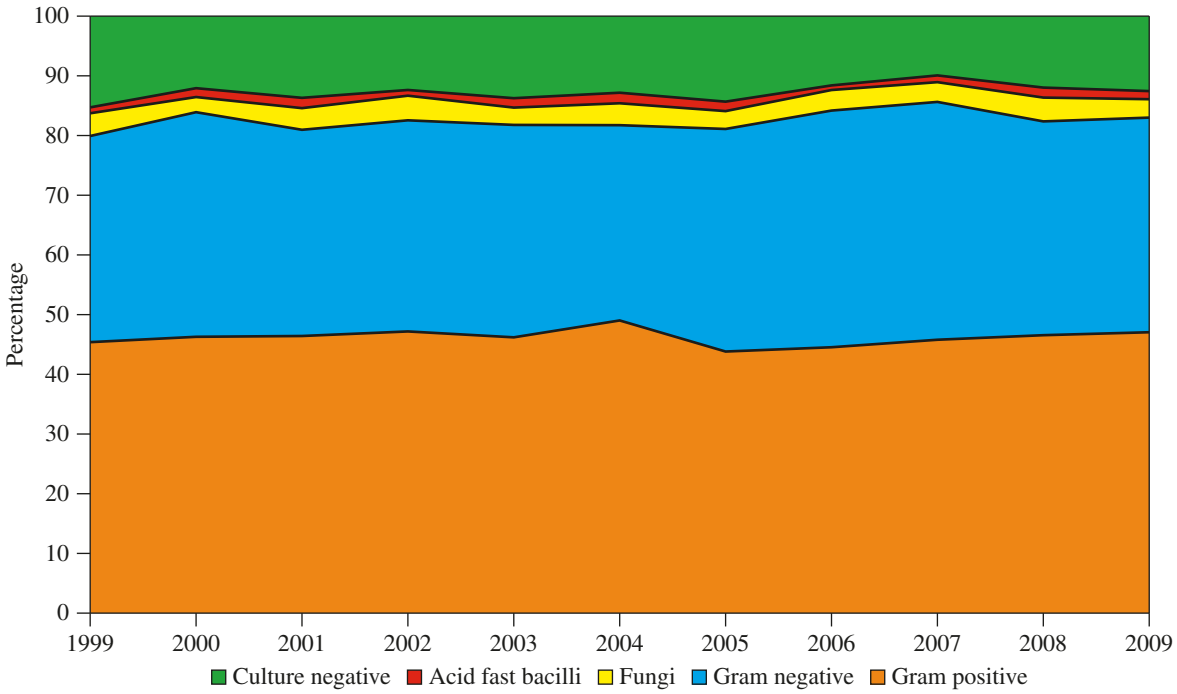



**Figure 25.** Trends in causative microorganisms of peritonitis due to continuous ambulatory peritoneal dialysis, 1999–2009.

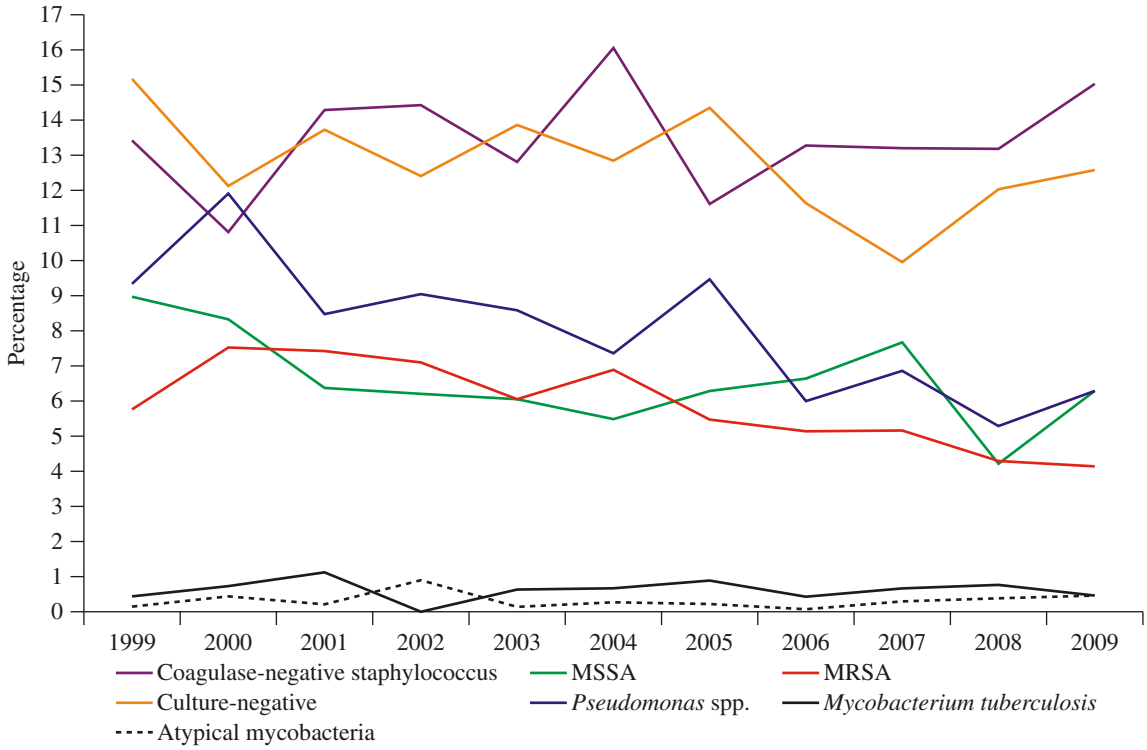



**Figure 26.** Common microorganisms involved in continuous ambulatory peritoneal dialysis peritonitis, 1999–2009. MSSA = methicillin-sensitive *Staphylococcus aureus*; MRSA = methicillin-resistant *Staphylococcus aureus*.

78.0% and 64.8%, respectively. When graft survivals (death not censored) of LDRT were compared with that of DDRT, LDRT showed significantly better survival rates: 1-year graft survival was 93.7%, 3-year graft survival was 93.2%, 5-year graft survival was 90.5%, and 10-year graft survival was 81% (Figure 28). The 5- and 10-year patient survival rates for LDRT were 96.2% and 92.3%, respectively, significantly better than

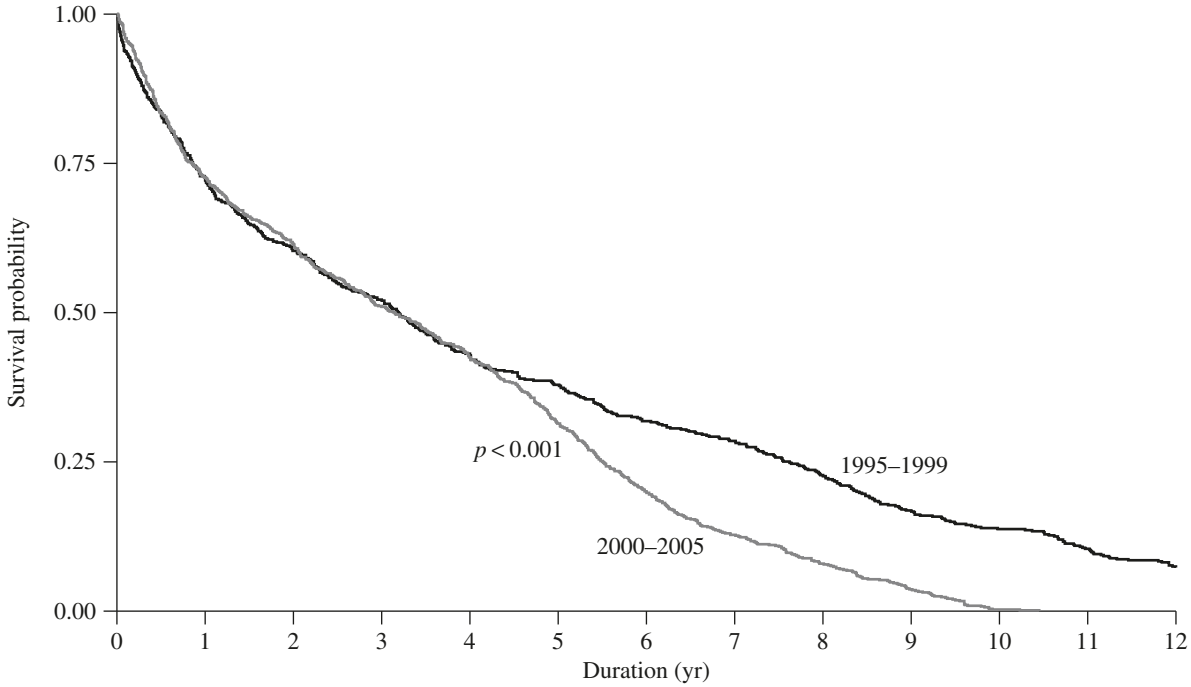



**Figure 27.** Hemodialysis (HD) patient survival, 1995–2005, stratified by time of HD commencement (1995–1999 *vs.* 2000–2005).

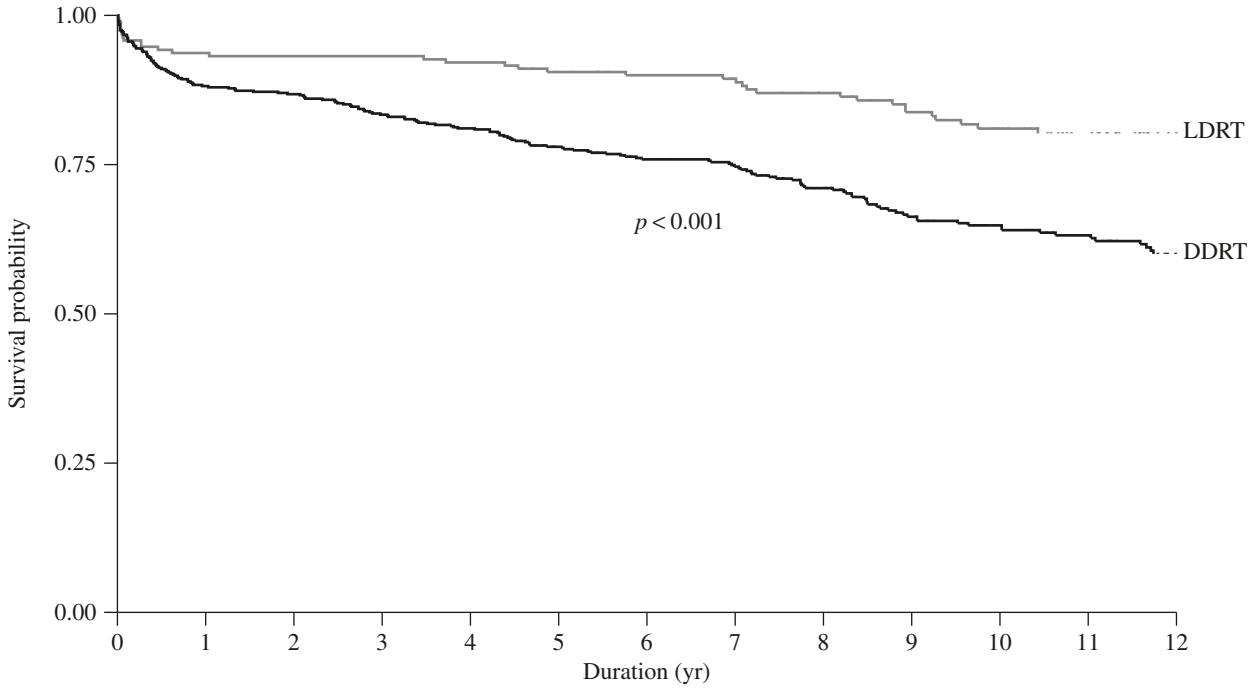



**Figure 28.** Graft survival, death not censored, living donor renal transplantation (LDRT) versus deceased donor renal transplantation (DDRT), 1995–2005.

the rates for patients who underwent DDRT ($p = 0.026$, log rank test).

### *Rehabilitation*

Work and daily activity status were recorded in the renal registry. From records for the last 11 years, about 80% of our patients worked full time or part time, or played the role of a housewife, or were retired. Disinclination to work and absence from school were a minority (Figure 29). More than 80% of patients had normal activities. Less than 10% of patients required assistance in their activities of daily living (Figure 30).

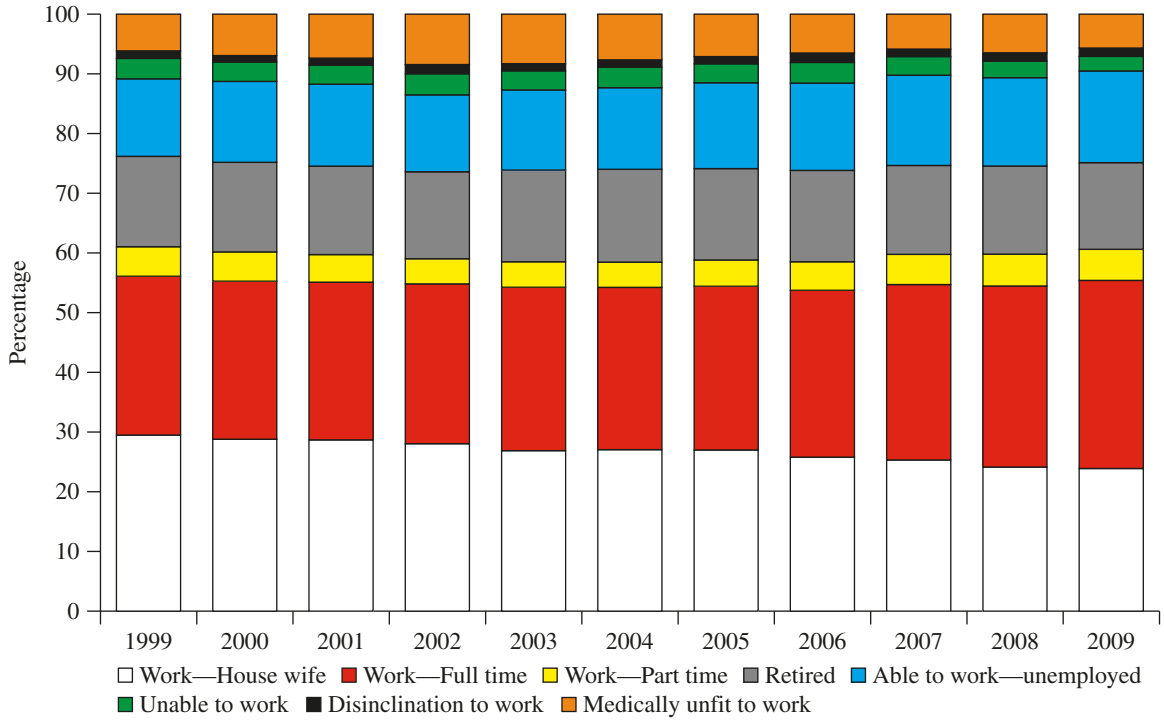



**Figure 29.** Work status of all adult renal replacement therapy patients, 1999–2009.

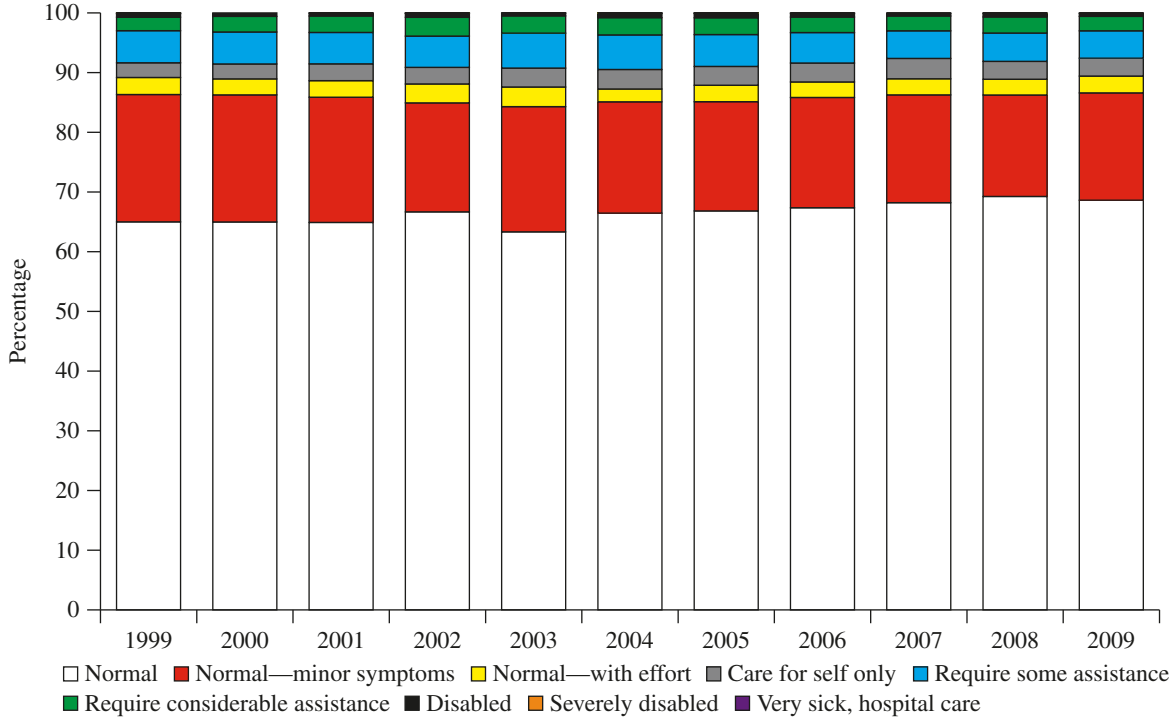



**Figure 30.** Daily activities of living status of all adult renal replacement therapy patients, 1999–2009.

## Discussion

The PD-first policy has been maintained in Hong Kong, and this has allowed high prevalent rates of RRT. The number of patients commencing PD had declined in 2009, whereas the number of patients on HD and who received transplants increased. Diabetes was the principle diagnosis of ESRF leading to RRT, and the increasing trend continued. The future goal of the medical and nephrology community should include better management of diabetic patients and the prevention of renal failure.

## Note

It is important to note that all the data presented in this report is subject to change based on future data updates or corrections. The analytical conventions used in this report may vary from previously published reports. Discrepancies from previously published reports may reflect database updates and/or differences in analytical approaches.

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